

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

IDENTITY OF *EUTAMIAS PALLIDUS* (ALLEN), WITH
A DESCRIPTION OF A RELATED FORM FROM
THE SOUTH DAKOTA BAD LANDS.

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A careful study of the chipmunks commonly known as *Eutamias minimus* in the collection of the Biological Survey and the U. S. National Museum has brought to light some interesting facts in regard to their interrelations and distribution. The above material is rich in specimens from northern Wyoming and southern Montana, and proves conclusively that *Tamias quadrivittatus pallidus* Allen is a valid species. A related form from South Dakota Bad Lands is described as new.

***Eutamias pallidus* (Allen).**

Tamias quadrivittatus pallidus Allen, Proc. Bost. Soc. Nat. Hist., XVI, p. 289, 1874.

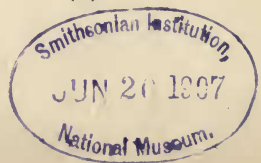
Tamias minimus Allen, Bull. Am. Mus. Nat. Hist., III, p. 110, 1890 (part)—not of Bachman, 1839.

General characters.—Similar in coloration to *E. minimus*, but much larger; hind foot about 33 mm. (instead of 30); tail nearly 100 mm.

Color.—A specimen from Camp Thorne, Montana (No. 11,656, U. S. N. M., July 18, 1873), agrees very well in color with early August examples of *minimus* from Green River. Comparable chipmunks (fresh postbreeding pelage) from other localities in the Yellowstone region (Powderville, Alzada, and Painted Robe Creek) have the sides more heavily washed with ochraceous.

Cranial characters.—Skull relatively much larger and heavier than in *E. minimus*, the zygomata more abruptly spreading; anterior portion of nasals broad; audital bullae larger and more inflated.

Measurements.—A very large female from Painted Robe Creek, Montana: Total length, 220; tail vertebrae, 104; hind foot, 34. Two males from the same locality, not fully adult: 204; 92; 32; and 205; 94; 33; respectively. A specimen from Powder River Basin, Wyoming, 222; 106; 34. The hind



foot of the Camp Thorne specimen (relaxed from dry skin) measures 32, a millimeter less than the average. Average of four adult males of *E. minimus* from Green River, Wyoming: Total length, 188 (180–195); tail vertebrae 87 (80–92); hind foot, 30.

The skull of the large female from Painted Robe Creek, Montana, measures: Occipito-nasal length, 34.3; basilar length of Hensel, 26.5; zygomatic breadth, 19.1; greatest breadth of braincase, 16.8. Another skull from the same locality measures: 32.1; 24.4; 18.5; 16.5. A large skull from Powder River Basin, Wyoming: 32.9; 24.8; 18.2; 16.5. Average of four skulls of *minimus* from Green River: Occipito-nasal length, 30.3; basilar length of Hensel, 23.1; zygomatic breadth, 17; greatest breadth of braincase, 15.4.

Remarks.—Chipmunks from the following localities agree well with the Camp Thorne specimen,* assumed to be typical:—*Montana*: Painted Robe Creek, Sage Creek (Big Horn Basin), Alzada, Powderville. *Wyoming*: Powder River Basin, Merino, Moorcroft, Thornton, Newcastle, Douglas, Big Horn Basin. Chipmunks from Fort Washakie and Wind River Basin average somewhat smaller, but agree in coloration; while others from the Pine Ridge country of northwestern Nebraska (Warbonnet Canyon and Glen, Sioux County, Coll. Univ. of Nebr.) are intermediate in coloration between typical *E. pallidus* and the pale Bad Lands form which is described later in the present paper. The much larger size and longer tail of *pallidus* serve at once to distinguish it from the small *minimus*. Intergradation can not be shown from present material and with such a discrepancy in size it seems best to give *pallidus* full specific rank. Green River City, Wyoming, has been commonly accepted as the type locality of *minimus*,† but Townsend's Narrative ‡ seems to place it considerably north of that point, and not far from the mouth of Big Sandy Creek.

In the original description of *E. pallidus* (l. c.), Doctor Allen gave its habitat as "The Great Plains, and the desert region generally of the interior of the continent." In a footnote it is characterized as "The small, pale form of the high, dry plains of the interior." No type specimen was designated, nor was a type locality assigned. In a later paper,§ however, Doctor Allen gave a more detailed characterization, and remarked (p. 796) that *pallidus* "Reaches an extreme phase of specialization in the Yellowstone region in respect to both pallor and smallness of size. He still further restricted *pallidus* to the Yellowstone region by the following words (p. 800): "typical *pallidus* (from the Yellowstone Plains)." Among the specimens listed by Doctor Allen were three taken by himself at Camp Thorne, Yellowstone River, July 18, 1873. These are the only specimens from a definite locality in the Yellowstone region which he considered "very pale." As one of the above specimens (No. 11,656, U. S. N. M.) is still extant, and in a good state of preservation, it seems best to consider Camp Thorne the type locality.

* The site of Camp Thorne is near the present town of Glendive, Montana.

† Cf. Allen, Bull. Am. Mus. Nat. Hist., III, p. 112, 1890.

‡ Narr. Journey across Rocky Mts., etc., p. 72, 1839.

§ Mon. N. Am. Roden, p. 795, 1877.

***Eutamias pallidus cacodemus* subsp. nov.**

BAD LANDS CHIPMUNK.

Tamias minimus Allen, Bull. Am. Mus. Nat. Hist., III, p. 110, 1890 (in part, specimen from "Mauvaises Terres").

Type from Sheep Mountain, Big Bad Lands, South Dakota. No. 138,137, U. S. National Museum, Biological Survey Collection. ♂ adult. Collected September 2, 1905, by Merritt Cary. Original number, 682.

General characters.—Size a trifle larger than *pallidus*; coloration much paler; tail very long.

Cranial characters.—Skull similar to that of *pallidus*, but slightly larger and heavier.

Color.—*Breeding pelage* (May and June): Median dorsal stripe blackish, with a slight admixture of ochraceous; lateral stripes pale ochraceous buff, with an olivaceous tinge. Dorsal pair of light stripes cream gray, lateral pair white. Facial stripes pale buffy ochraceous. Ears pale, lacking ochraceous of fall specimens. Forehead gray. Sides and back of neck, sides of body and flanks grayish white, with a trace of buff. Feet and rump grayish white, underparts pure white. Under surface of tail cream color, with a narrow black submarginal band; side hairs tipped with white. Hairs on upper surface of tail broadly white at base, then banded with black, and apically white, producing a mixed black and white effect.

A June male from Corral Draw (No. $\frac{2249}{2333}$, Coll. Am. Mus. Nat. Hist., June 9, 1894, W. W. Granger) is commencing to assume the fresh autumn coat on head and shoulders; while the back and rump present the extreme phase of worn winter pelage, being faded and bleached until the stripes are scarcely discernible. *Fresh postbreeding pelage* (August and September): Median dorsal stripe dark tawny ochraceous, becoming blackish toward rump; lateral stripes tawny ochraceous. Dorsal pair of light stripes grayish white; lateral pair broader, pure white. Dark facial stripes ochraceous, weakly indicated in palest examples. Anterior portion of ears bright ochraceous. Forehead mixed gray and ochraceous, or plain gray. Postauricular spots large and white. Sides and back of neck (except dorsal stripe), sides of body, and flanks washed with creamy buff, or a very pale ochraceous in darkest individuals. Upper surfaces of feet grayish white to creamy white. Under surface of tail varying from clay color to cream buff, the black submarginal band narrow. Hairs on upper surface of tail basally and apically cream buff, the median zone black.

Comparable specimens of *E. pallidus* in postbreeding pelage have the sides more strongly ochraceous, the dorsal and lateral stripes much darker, and the under surface of tail ochraceous.

Measurements.—Average of four adult males from type locality: Total length, 216.5 (210–225); tail vertebrae, 103.3 (97–110); hind foot, 34.5 (34–35). Type: Total length, 210; tail vertebrae, 100; hind foot, 34. Average cranial measurements: Occipito-nasal length, 32.5; basilar length of Hensel, 24.9; zygomatic breadth, 18.4; greatest breadth of braincase, 16. Type: 32.3; 24.4; 17.6; 15.6.

Specimens examined.—Total number, 32, all from South Dakota, as follows:

Corral Draw (near Sheep Mountain) 12 (Coll. Am. Mus. Nat. Hist., W. W. Granger); Cheyenne River Bad Lands 12, and "Mauvaises Terres" 1 (Coll. U. S. Nat. Mus., L. Stejneger and F. V. Hayden, respectively); Sheep Mountain 7 (Biol. Surv. Coll., Merritt Cary).

Remarks.—So far as at present known, this beautiful chipmunk, which is by far the palest member of the genus, occurs only in the Big Bad Lands of western South Dakota, and the Hat Creek Basin Bad Lands of extreme northwestern Nebraska*—the *Mauvaises Terres* of the French voyageurs. The extreme pallor of coloration is manifestly due to environment. The white, alkaline soil, which supports scarcely a vestige of vegetation over large areas, exerts a strong bleaching effect upon the few mammals restricted to the Bad Lands. The most marked instance of this among mammals, aside from chipmunks, is *Neotoma rupicola*, the palest wood-rat, which occurs only among the Bad Lands.

*While collecting in the Hat Creek Basin in 1901, the writer often saw very pale chipmunks in the Bad Lands of that region, but unfortunately collected no specimens.